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seem as though the inhabitants had provided for a retreat in case of the capture of either half of the town. The southern half is far better defended, naturally, by ravines and steep inclines, and artificially by its double walls, so that this may well have been the first home of the people who, afterwards, extended the limits of their walled town northwards. The weakest portion of the fortress is on its northeastern side where the artificial embankments are unusually high and steep, and where the main gateway opens out upon a broad level field on which is erected the mysterious enclosure whose outlines are given by Locke. The mound at the farther end of this enclosure I should say might well have served as a watch-tower either for the besieged or the besiegers,—its parallel walls affording means of escape and of defence. It is not clear to me but that the forest may have been allowed to stand both within and without the fort, even during its occupation, the trees being indeed an advantage both as protection against sun and wind, and as affording great help in actual combat.—CLEVELAND ABBE.

[Being unable to reproduce Mr. Abbe's drawings we have omitted his letters of reference.—EDS.]

• MICROSCOPY.

DISTRIBUTION OF THE RHIZOPODS.—At a meeting of the Academy of Natural Sciences of Philadelphia Prof. Leidy remarked that while it was exceptional to find the same species of the higher sub-kingdoms in the different parts of the world, it appeared to be the rule that most species of Protozoa were found everywhere under the same conditions. A large number of our fresh-water forms he had recognized as the same as those described by European authors. A less number of species are probably peculiar to every region. Among our fresh-water Rhizopods he had observed not only the genera *Amœba*, *Arcella*, *Diffugia*, *Euglypha*, *Trinema*, *Lagynis*, *Actinophrys*, etc., but also most of the species of these as indicated by European naturalists. It is an interesting question whether our fresh-water Protozoa have reached us from the same sources as those of Europe and other remote countries. If derived from the same sources they were probably infused in the waters of the different continents at an early age when the latter were not separated by ocean barriers. If thus early infused we have a remarkable instance of a multitude of specific forms retaining their identity through a long period of time. Such a view might appear to oppose the doctrine of evolution, but not

justly so, for the simplest forms would be the slowest or least likely to vary, while the most complex, from their extended relationships, would be most liable to variation. Perhaps, however, the simplest forms of life, of the same species, may have originated independently of one another, not only in different places, but also at different times, and may yet continue to do so. While the highest forms of life may have been slowly evolved from the simplest forms of the remotest age, equally simple forms may have started into existence at all times down to the present period. From the later original forms new ones may have been evolved to speed towards the same goal as those which preceded them.

NOTES.

IN an article in the "North American Review" entitled "Exact Science in America," Mr. Simon Newcomb concludes that "we are a generation behind the age in nearly every branch of exact science." He attributes this to the want of effective organization and incentive rather than to our lack of zeal in developing the material resources of the country. This statement also applies in a measure to biological science. How far the state and national geological and biological surveys have served, instead of any more direct and effective means of organizing scientific efforts, would be an interesting inquiry. As it is, the national and several state geological surveys have been almost the only means of educating students in science, of bringing to a focus the labors of scattered scientists, and of placing before the people the results of the examinations with more or less care of the geology and natural productions of our states and territories. Look, for example, at the Geological Survey of the state of New York. By the wisdom and liberality of the legislature of that state, a series of volumes on the geology, agriculture, palæontology, zoology and botany of that commonwealth have been issued, which have altogether immensely advanced these sciences in this country and assured European naturalists that in native ability and power of observation and of producing useful results from abstruse knowledge the American is not behind his trans-Atlantic brother in science. That survey also called in the aid of some eminent European naturalists, established a large museum, one of the finest in the world, and a body of assistants who have formed a coterie or school of observers, which have done and are doing much to elevate the standard